



BOĞAZIÇI ÜNİVERSİTESİ

ISS/EC-2001-10

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On Environmental Concern, Willingness to Pay, and Postmaterialist Values: Evidence from Istanbul*

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Revised: April 16, 2001

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Abstract

Objective: We explore the impact of geographical proximity of environmental problems on environmental concern and willingness to pay (WTP) for environmental improvement, with emphasis on the relevance of Inglehart's postmaterialism thesis on this inquiry. *Method:* A questionnaire was administered to 1565 respondents in Istanbul. The Contingent Valuation Method was used to measure WTP. Sea pollution in Istanbul (local issue), soil erosion in Turkey (national issue), and ozone depletion (global issue) were issues chosen for valuation. The sample was separated into three sub-samples, each being presented with only one issue. *Results:* Individuals distinguish between local and global environmental concern. People with materialist values rather than postmaterialist values exhibit more concern for local environmental problems. However, postmaterialist values determine WTP for improvement in both the local and the global environmental problems. *Conclusion:* Distinguishing among concern for environmental issues which are differentiated on the basis of geographical proximity has relevance for the ongoing postmaterialist values debate.

INTRODUCTION

The rise of global environmentalism, environmental activism, and social movements that draw from ever-increasing environmental problems have led many social scientists to focus on environmental concern. However, the way in which the term, environmental concern, has been conceptualized and operationalized, as well as its determinants, is still subject to a lively debate. Inglehart's postmaterialism thesis lies at the core of this ongoing debate. Inglehart posits that the way individuals give priority to different set of values reflects their socio-economic environment, and that improvements in their socio-economic environment results in individuals' shifting their attention from issues of physical sustenance to concerns related to quality of life (Inglehart, 1977). Inglehart's thesis has been tested widely in industrialized as well as developing countries. Contrary to Inglehart's initial claim, a number of studies reveal that citizens in both industrialized and developing countries exhibit high degree of concern for the environment (Brechin and Kempton, 1994; Dunlap, Gallup, and Gallup, 1993; Dunlap and Mertig, 1995). In response, Inglehart makes the distinction between having concern for objective environmental problems and subjective environmental values. He holds that environmental concern by citizens of developing countries can be explained by their experience of severe local environmental problems, and he adds that this is "only part of the story" and that "public support for environmental protection is also shaped by subjective cultural factors" (Inglehart, 1995:57). The distinction between concern for objective environmental problems and subjective environmental values modifies Inglehart's original thesis, and can be said to break global environmentalism into two types, namely that of the rich/North and the poor/South (Brechin, 1999; Guha and Martinez-Alier, 1997).

The aim of this paper is to contribute to this debate by exploring the results of a survey conducted in Istanbul with 1565 subjects. The purpose of the paper is threefold: (i) to propose two different environmental concern measures that aim at differentiating concern for

concrete environmental problems from concern for abstract environmental problems, and to identify the determinants of these specific concern variables; (ii) to measure ‘willingness-to-pay (WTP)’ — an indicator of propensity to act — for environmental improvement for three environmental issues differentiated with respect to their geographical proximity; (iii) to test the relevance of the postmaterialism thesis to this particular inquiry.

Environmental concern, with all the debate over its nature and definition, has typically been associated with variables such as age, gender, income, education, urbanity, and political ideology (Guagnano and Markee, 1995; Scott and Willis, 1994; Stern, Dietz, and Kalof, 1993). Studies show that youth and education are typically positively associated with environmental concern; however, associations between other demographic variables and environmental concern are not conclusive. Especially, studies that found a positive correlation between environmental concern and income and/or class have often been contested. Several researchers have pointed out that disadvantaged groups within a society did and would have a stake in environmental protection, given that they disproportionately experienced the costs of environmental degradation (Buttel and Flinn, 1978; Neiman and Loveridge, 1981; Martinez-Alier, 1995). Dunlap et al. (1993) show that the citizens of developing countries were no less concerned than citizens of industrialized countries (see also Kanagy, Humphrey, and Firebough, 1994). Brechin and Kempton (1994) back this challenge by suggesting that concern for the environment should be seen as a global phenomenon, emerging from multiple sources, such as direct exposure to environmental degradation, the political and institutional framework in a given community, and the effects of mass media, rather than being determined only by the level of economic development.

The conflicting evidence on the relation between environmental concern and socio-economic as well as other variables has led to several suggestions to improve the measure of concern. It has been suggested that special emphasis should be placed on ‘concrete and

specific' environmental issues rather than 'abstract and hypothetical' measures of general environmental concern (Wall, 1995). One solution is to look at the geographical proximity of a particular environmental problem; a general environmental concern measure might miss important qualitative distinctions among concern for different environmental problems located at different geographic distances to individuals. Although localization may not only refer to geographic distance, this is likely to be an important dimension influencing environmental concern.

This study differentiates between concern for concrete environmental problems, those that can be directly experienced, and concern for abstract environmental problems, those that are removed from daily experience and are not salient. Concrete environmental problems, such as water and air pollution, are of a local and tangible nature, posing an immediate threat to individuals. On the other hand, abstract environmental problems, such as the green house effect and ozone depletion, involve issues that are global and less tangible in nature, and they do not pose an immediate danger.

Furthermore, it has been argued that one has to go beyond stated concern and look at indicators of whether the individuals will act in a manner consistent with their expressed concern (Inglehart, 1995). Many studies have explored the role of concern towards the environment in predicting environmental behavior with inconclusive findings (e.g., Arcury, and Christianson, 1993; Vining and Ebreo, 1993). However, the survey questions that have been used to tap propensity to act in line with stated concern have typically involved single-item scales, and addressed non-specific and rather vague environmental issues (e.g., "Would you agree to an increase in taxes if the extra money is used to prevent environmental pollution" [Inglehart, 1995:61]).

This study uses a more precise measure of propensity to act and presents well-defined and specific environmental issues for individuals' evaluation. The measure used for propensity

to act is WTP, as revealed through a ‘contingent valuation’ survey. Markets for environmental goods typically do not exist, and one way of eliciting individuals’ valuation of environmental goods is by asking how much they would be willing to pay in money amounts for specified changes in quantity and improvements in quality. Since individuals’ valuations are contingent upon the particular hypothetical market described to them, this survey method has come to be known as the contingent valuation method (Mitchell and Carson, 1989).¹

We measured WTP for three distinct environmental issues. Sea pollution in Istanbul, a local problem; soil erosion in Turkey, a national problem; and ozone depletion, a global problem, were chosen as three separate environmental issues to be valued by respondents. For each issue, a carefully developed hypothetical scenario involving a clearly specified improvement was presented to respondents, and they were asked to reveal their willingness to pay a contribution towards the realization of this improvement. The use of three different, well-defined and specific issues in our WTP module allowed us to investigate the possible impact of geographical localization of the environmental issue on individuals’ propensity to act in line with their stated concern. As we move from environmental issues that are closer in terms of geographic dislocation to issues that are removed from the immediate proximity of the individuals, we might expect individuals to exhibit different levels of propensity to act.

We considered Inglehart’s much-debated postmaterialist values variable as one of the determinants of environmental concern and WTP. As already mentioned, Inglehart takes the position that public concern for environmental quality depends on affluence, and is therefore stronger in wealthy nations than in poor ones (Inglehart, 1977; see also Inglehart 1987, 1995; Inglehart and Abramson, 1999). The basic argument of Inglehart’s thesis is that beginning in the 1960s there has been increasing evidence of a shift in the basic value systems of citizens of advanced industrialized nations. Traditional materialist values have been gradually replaced by higher order, non-economic concerns. These postmaterialist values involve appreciation for

social equality, participation in decision-making, freedom of expression, and the improvement of the quality of life in general.

Inglehart acknowledges that there is considerable support for environmental protection in poor countries that have relatively severe objective environmental problems, and he offers the distinction between 'objective environmental problems' and 'subjective pre-dispositions' towards the environment as two different sources of environmental concern (Inglehart, 1995). He holds that environmental concern can be explained at best partially by objective environmental problems and that subjective postmaterialist values continue to play an important role in predicting environmental concern. These arguments have led to a reexamination of the postmaterialism thesis with regard to explaining the global environmentalism of the 1990s. There is still a very much ongoing and lively debate on issues stirred by these discussions (e.g., Abramson, 1997; Brechin and Kempton, 1994; Diekmann and Franzen, 1999; Dunlap and Mertig, 1995; Guha and Martinez-Alier, 1997; Kidd and Lee, 1997). The debate also draws on the more general controversy regarding Inglehart's postmaterialist values index (e.g., Abramson, 1997; Brechin and Kempton, 1997; Davis and Davenport, 1999; Dunlap and Mertig, 1997; Inglehart and Abramson, 1999). This study pays careful attention to Inglehart's distinction between objective environmental problems and subjective pre-dispositions in choosing the environmental problems to be investigated. All of the problems chosen (sea pollution in Istanbul, soil erosion in Turkey, and global ozone depletion) involve environmental goods that basically have only 'non-use' value. In contrast to the 'use value' that derives from the actual and direct use of the environment, the non-use value is the value that individuals place either on other people's having a clean and unexploited environment, on the availability of a clean and unexplored environment to future generations, or on the knowledge that a species exists and will continue to exist. Thus, the concern and WTP expressed by the respondents are expected to arise from their subjective valuation of

these environmental issues rather than the objective nature of these issues. Furthermore, by focusing on issues that involve mainly non-use value, the differences in concern and WTP expressed by respondents are expected to be mainly due not to the differences in the nature of these issues but to their geographical proximity to the respondents.

METHODOLOGY

The study consisted of two phases: qualitative research, and a quantitative cross-sectional survey. The qualitative phase was formative and was undertaken to improve understanding and knowledge of attitudes and concerns of the general public related to environmental issues. The output of the qualitative research guided the construction of the questionnaire instrument as well as providing a frame of reference to interpret the quantitative results.

Design of the quantitative phase:

Regarding environmental concern, on the one hand, a set of environmental problems was identified, and all respondents were asked to rate their intensity of concern over these issues. Regarding WTP, on the other hand, after carefully reviewing the information obtained from in-depth interviews of the qualitative phase, three particular environmental problems were chosen for the WTP module (sea pollution in Istanbul as the local problem, soil erosion as the national problem, and ozone depletion as the global problem). A hypothetical scenario was developed for each case, and respondents were asked to value the improvement the hypothetical project would bring about.

Administering a contingent valuation questionnaire with three different environmental scenarios, and asking each respondent to value three different environmental issues in one sitting, would have been impossible for time reasons. Moreover, according to theory of choice asking individuals to value goods in a sequence would prevent their independent valuation, as income effects will have different values depending on the order in which goods

are presented for valuation. Therefore, it was decided that each respondent would be asked to value one environmental issue. Consequently, each scenario was administered to equally-sized different random samples.

For the contingent valuation questions of the questionnaire, other design issues involved the choice of the elicitation method, the nature of payment vehicle, and the timing of payments that respondents would be confronted with in their hypothetical valuations. Following Carson et al. (1992), a binary discrete choice question format was chosen as the elicitation method. This type of question, referred to also as a ‘take-it-or-leave-it’ question, requests the respondent to give a yes-or-no response to a specific cost (see Instrument section below for details). A one-time single payment was chosen as the payment vehicle. The lump-sum one-time payment forces a tighter budget constraint on respondents and leads to conservative estimates of WTP. However, this is a feature that will affect WTP for all three issues equally and, hence, is not expected to lead to any bias in comparisons. In order to cover a wide range of possible WTP amounts, four different versions, each starting with a different Turkish Lira amount, was used in each of the three environmental scenarios.

Instrument:

The questionnaire consisted of (i) a demographic module, (ii) a postmaterialist values module, (iii) an environmental concern module, and (iv) a WTP module. The items in the first three modules were administered to the whole sample.

In the WTP module, for each of the three environmental issues presented in the questionnaire there were four different versions (versions A, B, C, and D), each version corresponding to a different starting take-it-or leave-it amount. Thus, administered in sets of four, there were all together twelve different versions of the questionnaire. The Turkish Lira amounts used in the questionnaire were determined according to the information about WTP obtained during the pre-test stage.

The contingent valuation questions started with a detailed description of the environmental problem included in the version that was randomly assigned to the respondent. In each case verbal information was complemented with visual information in the form of figures and charts. The description of the problem was followed by the description of a project, which, if adopted, would bring about well-defined improvement in the quality of the environmental good under consideration. Interviewers were instructed to make sure that respondents understood what the proposed project involved and how it would solve the environmental problem at hand.

In asking about WTP, a discrete-choice referendum elicitation format was used, which probed whether the respondent would approve the proposed project that would solve the problem at hand if it cost a specified amount that would be paid by their household as a one-time payment. Every respondent was also asked a follow-up amount appropriate to the version they received and depending on their answer to the first WTP question. Those who said “yes” were asked for a higher amount and those who said “no” a lower amount (see Table 1).²

Insert Table 1 here

If the respondent refused to pay any amount, s/he was presented with a question that asked why s/he would not pay. This question aimed at controlling for the perceived efficacy of the project, and checked whether the respondent did not pay because s/he did not find the project credible or because of economic reasons.

Sample:

The questionnaire was administered to a total of 1565 households drawn from metropolitan Istanbul using a clustered random sample. The fieldwork was carried out during the period of December 10-31, 1998. In the first stage selection, 125 districts were drawn

from a total of 567 districts of Istanbul with probabilities proportionate to their population counts.³ In each district 4 blocks were selected randomly. Three households were chosen in each block using a table of random numbers. Each household in a block was assigned a version that involved a different environmental good to be valued. A respondent over the age of 18 within each household was chosen for the interview.

The procedure outlined above assured that there were three sub-samples, one for sea pollution in Istanbul, one for soil erosion in Turkey, and one for global ozone depletion, each of roughly equal size. In each sub-sample, all households chosen were assigned randomly to one of the four different versions with different costs (see Table 1). Before analyzing the data, the comparability in terms of education, gender, income, and age was established across three sub-samples that were presented with different scenarios. No significant differences were observed among the three sub-samples used.

The study sample consisted of respondents with a mean age of 37.9 years and a mean education of 8.3 years (corresponding roughly to the completion of middle school). Fifty-five percent of the sample was female while 45 percent was male. Thirty-three percent of the sample was of rural origin, having migrated to Istanbul in the last 15 years. Two percent of the sample was found out to be unemployed, while 57 percent had social security.

Measures:

Environmental Concern: The question that probed environmental concern listed a total of 15 different environmental problems, and the respondents were asked to report their degree of concern for each problem. The possible answers consisted of “not concerned”, “somewhat concerned”, and “very concerned”. Two factors were detected through factor analysis on the 15 different items used in the environmental concern question. When factor loadings were examined, air pollution, soil pollution, sea pollution, soil erosion, deforestation, and solid waste (garbage) constituted one group with a moderate Cronbach’s alpha of 0.60, which was

identified as *local environmental concern*. A 1-12 point scale was constructed with the items identified in the factor analysis, higher scores indicating higher levels of concern. With a Cronbach's alpha of 0.73, the second group consisted of global warming and the greenhouse effect, tropical deforestation, ozone depletion, acid rain, nuclear waste, and the extinction of species. A 0-12 point *global environmental concern* scale was constructed with items identified in the second factor.

Willingness To Pay (WTP): The construction of the WTP variable was carried out as follows: The WTP for each respondent was identified as the *minimum* amount the respondent has expressed WTP for by saying "Yes" to that amount. The double-bounded dichotomous choice format employed gave an interval within which each respondent's true WTP lay. The estimate arrived at by using the lower bound of this interval is therefore a very conservative estimate for true WTP.

Postmaterialist Values: We used the scale that was developed by Inglehart (1990) as the measure of postmaterialist values. Inglehart's scale involves a battery of questions to measure value priorities, presenting respondents with twelve different goals and asking them to rank these goals when grouped in a number of different ways. Respondents' answers are then used to produce their relative ranking of these twelve different goals. On this scale, items on "growth rate", "defence", "order", "fighting rising prices", "stable economy", and "fighting against crime" are designed to tap emphasis on physical security, whereas items on "freedom of expression", "emphasis on ideas", "more say on government decisions", "emphasis on more humane society", and "beautiful cities and countryside" are designed to tap postmaterialist value priorities. We then constructed a distribution of the postmaterialist values scores over the whole sample by using the factor loadings of Inglehart's 12-item battery, the negative pole of the distribution representing the highest level of postmaterialist values. In the sample, the responses tended to gather more towards the positive pole, pointing

at a higher proportion of respondents with materialist values.

Demographics: Education — The question tapping education asked the number of years the respondent had attended a formal education program. Illiterates were coded as 0.

Urbanity — The urbanity measure was computed from the variables of place of birth (metropolitan city, small city, town, village) and number of years lived in Istanbul weighted by age. For example, if a respondent was born either in a small city or a metropolitan city, and lived at least 50 percent of his or her life in Istanbul, the respondent was coded as urban; otherwise, a respondent was coded as rural.

Material security — Factor analysis was performed on occupation rankings, per capita consumption (which is the monthly expenditure divided by household size), and the summative scale of household belongings (see Table 2). Factor loadings of the analysis were saved as the variable of material security.

Insert Table 2 here

RESULTS

Environmental Concern:

As mentioned before, two different concern measures were developed to distinguish between local and global environmental concern. When analyzed over the whole sample, the mean of the local concern (10.34) is significantly higher than that of the global concern (9.71), with a t -value of 125.9 ($p < 0.001$).

Rank-order correlation analysis revealed education, urbanity, material security, and postmaterialist values variables as being significantly correlated with each of the specific environmental concern measures developed. These variables were then entered in a multiple regression model for each concern variable (Table 3).

Insert Table 3 here

Table 3 shows that education, urbanity, and postmaterialist values are significant explanatory variables for local environmental concern. Note the negative coefficient in front of the postmaterialist values variable: Respondents who were more materialist were more likely to be concerned about local problems. For global concern, significant explanatory variables were education and urbanity. No interaction effects among explanatory variables were detected in any of the two regressions.⁴

Willingness to Pay:

One would expect that people would be more willing to pay for local and concrete environmental problems as opposed to more global and abstract problems. Table 4 displays the mean WTP of respondents for improvements for each of the three environmental problems. Respondents are willing to pay lesser amounts as we move from the local environmental problem to national and global environmental problems. The differences between the means are not, however, statistically significant.

Insert Table 4 here

Rank order correlation analysis revealed education, urbanity, material security, and postmaterialist values variables as being significantly correlated with WTP. No significant correlation was detected between environmental concern variables and WTP. Table 5 presents the regression equations for WTP for each of the three distinct environmental issues, where the variables correlated with WTP are the explanatory variables.

Insert Table 5 here

Table 5 shows that postmaterialist values scale is the only significant explanatory variable in the case of the local environmental problem. Checking for interaction terms in this case revealed that there is statistically significant interaction between education and postmaterialist values variables as well as between education and material security variables.

That is, postmaterialist values variable has an impact on WTP for the local issue as long as it is combined with education and material security. In the case of the national problem, only material security was significant in explaining WTP. Similar to the local issue case, significant interaction effects were observed in the regression equation for the national issue between education and postmaterialist values variables as well as between education and material security variables. As for the global environmental issue, postmaterialist values and material security variables were found to significantly add to the model, and no interaction effects were detected in this case.

DISCUSSION

One of the aims of this study was to explore the determinants of concern for the environment and to investigate whether the geographical proximity — local versus global nature — of the environmental problem at hand had an impact on individuals' stated concern. The results indicate that individuals do differentiate among different types of concern; indeed, factor analysis points at two distinct types of environmental concern, namely the local and the global environmental concern. The local environmental concern was found to be significantly higher than the global environmental concern. These findings are in line with Van Liere and Dunlap's (1980) argument that different environmental problems mean different things to people. A measure of general concern may indeed not measure what a specific concern measures (see also Brechin and Kempton, 1994). The findings of this study indicate that geographical proximity of environmental problems may be one dimension along which such a differentiation occurs.

When the determinants of local environmental concern were analyzed, education and urbanity were found to positively influence local environmental concern, while there was a negative relationship with postmaterialist values. That materialist values, rather than postmaterialist values, are more likely to influence local environmental concern might at first

sight contradict Inglehart's (1977) initial argument. However, it might also be argued that for the respondents the issues that made up the local environmental category were more objective problems compared to those that made up the global environmental concern. In other words, local environmental problems might not be considered as subjective valuation issues, but as objective problems that require urgent solutions. In the case of global environmental concern, education and urbanity explained the variance. The effect of postmaterialist values was overridden in the presence of education and urbanity variables (and no interaction effects were detected between postmaterialist values and either education or urbanity). Education and urbanity seem to determine concern about global environmental issues regardless of one's subjective values. Yet, as will be further discussed below, when it comes to commitment to act for the global environmental issue, as revealed in this study by WTP findings, postmaterialist values override the effect of education and urbanity.

Multiple regression analysis regarding WTP show that in the case of the local issue, postmaterialist values variable overrides the effects of all other explanatory variables. Significant interaction effects between postmaterialist values and education variables, as well as between education and material security variables, indicate, however, that without education and material security postmaterialist values may not translate into WTP. In the case of the national issue, the only significant explanatory variable is material security, with significant interaction effects between material security and education variables, as well as between education and postmaterialism variables.⁵ In the case of the global issue, postmaterialist values and material security were significant predictors of WTP.

The fact that the effects of education and urbanity, which were significant in explaining global concern and prevailed over the effect of postmaterialist values, disappeared in the case of WTP for the global issue is a striking contrast. This might indicate that, while environmental concern, be it local or global, may arise independently of postmaterialist values,

for commitment to make actual payments postmaterialist values turn out to be determinant. These findings are similar to those of Diekmann and Franzen (1999) and of Dunlap and Mertig (1996). Local environmental concern, which is more likely to tap an awareness of environmental problems mainly in one's community, is higher among those who are more materialistic. However, when the issue is willingness to give up something concrete (part of one's household income in this study), people with high materialist scores are reluctant to do so for economic reasons. Indeed, 70 percent of the respondents who refused to pay showed their insufficient financial means as the reason for not paying anything for the environmental improvement.⁶

The finding that, irrespective of whether the issue is a local or global one, subjective values become predominant when it comes to propensity to make actual payments, while for exhibiting concern the objective nature of issues may be important, provides support for some of Inglehart's (1995) arguments. It has to be recalled, however, that the study uses Inglehart's particular (materialist-postmaterialist) values scale, and it may very well be that the results obtained are driven solely by the nature of Inglehart's scale. Indeed, a number of studies have addressed the issue of what it is that Inglehart's scale actually measures and found it far from being unambiguous (Abramson, 1997, Brechin and Kempton, 1994, 1997; Brooks and Manza, 1994; Dunlap and Mertig, 1995, 1997; Kidd and Lee, 1997; Pierce, 1997). In this regard, Brooks and Manza (1994) argue that Inglehart assumes at the outset the existence of two classes of citizens with distinct and non-overlapping values. Within each class, individuals are assumed to exhibit categorically the same set of values in the face of all issues they encounter. Inglehart's index presupposes, therefore, that one cannot simultaneously have both postmaterialist and materialist values.

Inglehart's presupposition that individuals have a distinct but homogenous set of values, is, however, open to challenge. There may be no discrete and homogeneous categories of

value commitment. It is equally plausible that there is a plurality of values (Brechin, 1999). The possibility of overcoming the dichotomy in which environmental concern and behavior is attributed either to material security or to physical safety needs is mainly an open issue. There needs to be a more detailed and thorough analysis of such issues before confidently asserting that values or subjective pre-dispositions stem only from socio-economic parameters. It may very well be that Inglehart's postmaterialist values scale is basically a list of policy goals that tautologically assumes the relation to values it purports to explain. This relationship between values and public policy goals needs to be substantiated.

In conclusion, more theoretical and empirical work needs to be done to confidently argue about the suitability of the postmaterialism thesis to explain concern and behavior regarding the environment. This study, which distinguishes among concern for environmental issues that are differentiated on the basis of geographical proximity, is a modest attempt towards this direction.

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Table 1: Project Costs by Versions, and the Distribution of the Sample
Across Different Versions and Environmental Problems

	Version A	Version B	Version C	Version D	<i>Total N</i>
Starting amount (m. TL)	40	20	10	5	
IF YES amount (m. TL)	80	40	20	10	
IF NO amount (m. TL)	20	10	5	2	
Sea Pollution in Istanbul (Local Issue)	139	139	128	118	<i>524</i>
Soil Erosion in Turkey (National Issue)	141	140	124	119	<i>524</i>
Ozone Depletion (Global Issue)	132	138	126	121	<i>517</i>

Table 2: Scales and individual items used to construct scales

Scale	Items
URBANITY	<ul style="list-style-type: none"> - Where were you born? (metropolitan city, small city, town, village) - How long have you been living in Istanbul? (weighted by age)
PER CAPITA CONSUMPTION	<ul style="list-style-type: none"> - Approximately how much do you spend for household expenditures in a month? - Including you, how many people are living in your household?
OCCUPATION	<ul style="list-style-type: none"> - What is your occupation? What kind of work do you do? Explain in details. (Categories below were created after the examination of the above open-ended question) -Unemployed -Housewife -Student -Retired -Worker -Small-to-medium size business -Medium ranked manager -Professional (engineer, lawyer, physician, etc.)
HOUSEHOLD BELONGINGS	<ul style="list-style-type: none"> -Do you own the following items? -Washer -Dishwasher -Refrigerator -Dryer -Cellular phone -Vacuum cleaner
MATERIAL SECURITY	<ul style="list-style-type: none"> -Composite measure of: -Occupation -Per capita consumption -Household belongings

Table 3: Determinants of Different types of Environmental Concern**Results of Multiple Regression Analysis (OLS)****Coefficients*****N* = 1565****(*t*- values in parentheses)**

	Local Environmental Concern	Global Environmental Concern
Education	0.166*** (5.291)	0.170*** (5.487)
Urbanity	0.074** (2.790)	0.096*** (3.670)
Material Security	-0.047 (-1.537)	0.056 (1.838)
Postmaterialism	-0.06* (-2.128)	0.033 (1.242)
\bar{R}^2	0.038	0.064
F-ratio	14.18***	24.86***

*Significant at the 0.05 level

** Significant at the 0.01 level

***Significant at the 0.001 level

Table 4: Mean WTP for Environmental Issues

	N	Mean (Million TL)*	St. Dev
Sea Pollution in Istanbul (Local Issue)	524	10.53	17.69
Soil Erosion in Turkey (National Issue)	524	9.86	16.15
Ozone Depletion (Global Issue)	517	9.51	16.45

* At the time of the study USD 1 was approximately 400.00 Turkish Liras.

Table 5. Determinants of Willingness to Pay

Results of Regression Analysis #

Coefficients

(Std. Err. in parentheses)

	WTP for Sea Pollution in Istanbul (Local Issue) N=524	WTP for Soil Erosion in Turkey (National Issue) N=524	WTP for Ozone Depletion (Global Issue) N=517
Education	0.911 (0.048)	1.014 (0.048)	1.003 (0.045)
Urbanity	0.941 (0.051)	0.949 (0.049)	1.003 (0.054)
Postmaterialism	0.942* (0.029)	0.987 (0.026)	0.904** (0.024)
Material Security	0.969 (0.018)	0.941** (0.017)	0.946** (0.015)
Log likelihood	- 646.619	- 676.681	- 680.371
Chi²	27.62	18.90	38.44
Prob> chi²	0.000	0.000	0.000

* significant at the 0.05 level

** significant at the 0.01 level

The regression equations were estimated using the maximum likelihood estimation method under the assumption that the depended variable followed an appropriate Weibull survival distribution (for details, see Zenginobuz, Adaman, and Gök'en, 2000).

Notes

¹ The contingent valuation method has recently been used very extensively, in the U.S.A. as well as developing countries, to arrive at monetary estimates of the damage caused by environmental accidents and disasters (see, for example, Carson, Mitchell, Hanemann, Kopp, Presser, and Ruud, 1992; Whittington, 1998).

² This method of gathering information on WTP is called the double-bounded dichotomous choice elicitation method (see Carson et al., 1992, for an application).

³ Lists of voter registration that were constructed for the 1995 parliamentary elections were taken as the base for the sampling. The population above 18 years of age in Istanbul was given as 4,869,598.

⁴ To check interaction effects between explanatory variables in both the local and the global concern equations, separate regression models were developed in which the concern variable was regressed on a given pair of explanatory variables plus the product of these variables. A significant coefficient for the product term would have indicated a significant interaction between the explanatory variables.

⁵ Overall examination of responses to the soil erosion case revealed that introducing the intermediate category of what we called the national environmental good in addition to differentiating between local and global environmental goods did not add anything significant to our analysis. Recall also from the construction of the environmental concern variables above that factor loadings pointed at two distinct factors identified as local and global environmental concern.

⁶ A detailed analysis, using both qualitative and quantitative data, of economic as well as socio-political reasons for why respondents may have reported no WTP are discussed in a companion paper (Adaman, Gök°en, and Zenginobuz, 2000).
